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Comparison of Bone Resorption Rates after Intraoral Block Bone and Guided Bone Regeneration Augmentation for the Reconstruction of Horizontally Deficient Maxillary Alveolar Ridges.

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Abstract

Purpose. Bone atrophy after tooth loss may leave insufficient bone for implant placement. We compared volumetric changes after autogenous ramus block bone grafting (RBG) or guided bone regeneration (GBR) in horizontally deficient maxilla before implant placement. *Materials and Methods*. In this retrospective study, volumetric changes at RBG or GBR graft sites were evaluated using cone-beam computed tomography. The primary outcome variable was the volumetric resorption rate. Secondary outcomes were bone gain, graft success, and implant insertion torque. *Results*. Twenty-four patients (28 grafted sites) were included (GBR, 15; RBG, 13). One patient (RBG) suffered mucosal dehiscence at the recipient site 6 weeks after surgery, which healed spontaneously. Mean volume reduction in the GBR and RBG groups was 12.48 ± 2.67% and 7.20 ± 1.40%, respectively. GBR resulted in significantly more bone resorption than RBG ($P < 0.001$). Mean horizontal bone gain and width after healing were significantly greater in the GBR than in the RBG group ($P = 0.002$ and 0.005, resp.). Implant torque was similar between groups ($P > 0.05$). *Conclusions*. Both RBG and GBR hard-tissue augmentation techniques provide adequate bone graft volume and stability for implant insertion. However, GBR causes greater resorption at maxillary augmented sites than RBG, which clinicians should consider during treatment planning.